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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/568,946

02/21/2006

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EXAMINER

STEVENS, BRIAN J

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

05/12/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,946	Applicant(s) COSTA ET AL.	
	Examiner Brian J. Stevens	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19 is/are allowed.
- 6) ☒ Claim(s) 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is in response to Application No. 10/568,946 filed on February 21st, 2006. The amendments presented on March 11th, 2009, which amends claims 19 and 20 and cancels claims 1-18 and 21-24 are hereby acknowledged. Claims 19 and 20 remain pending.

Response to Arguments

2. Applicant's arguments, see Remarks, filed March 11th, 2009, with respect to claim 19 have been fully considered and are persuasive. The objection of claim 19 has been withdrawn.

3. Applicant's arguments, see Remarks, filed March 11th 2009, with respect to the objection of claim(s) 20 have been fully considered and are persuasive. Therefore, the objection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Allowable Subject Matter

4. Claim 19 is allowed.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2005/0018791 A1 by Molisch et al., in view of US 2004/0097238 A1 by Hwang et al., in further view of US 2003/0027522 A1 by Valdivia et al., in further view of US 2004/0179627 A1 by Ketchum et al.

7. Molisch teaches a method for allocating radio communication resources in radio cells of a cellular radio communication system having a plurality of user stations and network units, comprising:

dividing a frequency band (See Figure 2, [202]) into a plurality of sub-carriers (See Figure 2, Subband N A and B, Subband N-1 A and B, and Subband N-2 A and B) used in the radio communication system for communication purposes (See Paragraph [0003], "A number of possible modulation/multiple access schemes are considered for a physical layer of an ultra wide bandwidth (UWB) communications system by the IEEE 802.15.3a standards working group"), by dividing the frequency band into a number of sub-bands (See Figure 2, Subband N, Subband N-1 and Subband N-2), each sub-band including at least one sub-carrier (See Figure 2, where each Subband has at least one sub-carrier, specifically 2, A and B), but does not teach so that the number of the sub-bands is different in at least two of the radio cells;

dividing the user stations into a number of groups; and

allocating each group of the user stations to one of the sub-bands for communication.

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Hwang teaches the knowledge of dividing the user stations (See Paragraph [0024], “If a predetermined condition is satisfied, the BS establishes a channel with the MS by assigning a first OFDM frequency resource to the MS. If the MS is outside of the near cell area, the BS establishes a channel with the MS by assigning a second OFDM frequency resource to the MS”) in a number of groups (See Abstract, “into at least four frequency groups”), is well known in the art. Hwang further teaches allocating each group of the user stations to one of the sub-bands for communication (See Abstract, “The frequency groups are sequentially assigned to cell areas of each BS such that lower frequency groups are available to a near cell area and higher frequency resource groups are available to a remote cell area”, where each MS is determined to fall within a certain area, thus allocating each group of MS to one of the sub-bands), is well known in the art.

Valdivia teaches the knowledge of having a different amount of sub-bands in different radio cells/base stations (See Paragraph [0068], “each cell has different number of subbands allocated to it based on the volume of satellite resources needed in that particular geographic cell”), is well known in the art.

Ketchum teaches the knowledge of starting with an initial transmission with a certain transmission capacity, SNR, based upon the way sub-bands are distributed (See Paragraph [0199], “the number of subbands to include in each set may be dependent on the SNR”, where in order change the number of subbands in each set, and SNR has to be taken after an initial transmission), then modify the sub-bands and calculating the transmission capacity, SNR, (See Paragraph [0199], “the number of subbands to

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include in each set may be dependent on the SNR", where the sub-bands are redistributed based upon the SNR, thus being calculated) is well known in the art.

Ketchum further teaches the knowledge of achieving an increase in transmission capacity (See Paragraph [0005], "The MIMO system can provide improved performance (e.g., increased transmission capacity") and a transmission capacity in the at least two radio cells (See Paragraph [0199], "the number of subbands to include in each set may be dependent on the SNR", thus more than two radio bands), is well known in the art.

8. It would have been obvious to one of ordinary skill in the art having the teachings of Molisch, Hwang and Valdivia before them at the time the invention was made, to modify the method of Molisch to further include having the number of the sub-bands is different in at least two of the radio cells; dividing the user stations into a number of groups; and allocating each group of the user stations to one of the sub-bands for communication. Through the use of having a different number of sub-bands in each cell would make it possible to allocate valuable bandwidth more effectively, rather than having a set way of allocation per cell. Secondly through the use dividing the stations into groups and assigning each group to a specific sub band so that lower frequency groups are available to a near cell area and higher frequency resource groups are available to a remote cell area, thus improving reception. One of ordinary skill in the art would therefore have been motivated to make the modification to further include the number of the sub-bands is different in at least two of the radio cells; dividing the user stations into a number of groups; and allocating each group of the user stations to one of the sub-bands for communication.

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9. It would have been obvious to one of ordinary skill in the art having the teachings of Molisch, Hwang, Valdivia and Ketchum before them at the time the invention was made, to modify the method of Molisch, Hwang and Valdivia to further include starting from the transmission capacity of an initial constellation of said dividing into the sub-bands and the groups and said allocating of each group to the one of the sub-bands; and calculating the transmission capacity of a modified constellation of said dividing into the sub-bands and the groups and said allocating of each group to the one of the sub-bands. In order to increase the transmission capacity of any type of transmission a readings must be taken from a first transmission in order to determine what needs to be corrected. Through the use of finding the SNR, can determine how the sub-bands needs to be re distributed, thus improving the transmission capacity. One of ordinary skill in the art would therefore have been motivated to make the modification to further include starting with an initial transmission with a certain transmission capacity, SNR, based upon the way sub-bands are distributed, then modify the sub-bands and calculating the transmission capacity, SNR.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Stevens whose telephone number is (571)270-3623. The examiner can normally be reached on M-F 9-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BS/

/Brian J. Stevens/

/Kevin M. Burd/

Primary Examiner, Art Unit 2611